CLAIMS

1. (Amended) A bicycle headlamp comprising:

a rotor comprising a plurality of magnet plates attached to spokes of a bicycle wheel along the circumference of the wheel, each magnet plate having the form of an arc of a certain circle and comprising a plurality of magnets disposed at regular circumferential spacings with alternating south and north poles; a stator comprising a power-generating coil comprising a coil and an iron core disposed in a fixed position to face the magnetic pole faces of the magnet plates of the rotor; and a case separated from the stator, or for containing a part of the stator, wherein the case contains at least a headlamp electrical circuit comprising a resonance circuit formed of the power-generating coil of the stator and a capacitor connected in series with the power-generating coil, for establishing resonance at a frequency synchronized with a certain relative speed of the magnets, and a DC power circuit for rectifying, smoothing, and outputting electric power obtained from the power-generating coil of the resonance circuit, a light-emitting diode which is lit by the electric power supplied from the headlamp electrical circuit, and a condenser lens for focusing light emitted from the light-emitting diode in front of the bicycle and

for illuminating the roadway.

2. A bicycle headlamp according to Claim 1, wherein the stator comprises the magnet plates attached to the spokes of the bicycle along the circumference of the wheel, in a continuous ring shape or in separate positions.

3. A bicycle headlamp according to Claim 1, wherein the light-emitting diode is a white light-emitting diode with a luminous intensity of 2 cd or higher, and the lens has such a focal length that a certain level of illumination is ensured at a specified distance.

4. A bicycle headlamp according to Claim 4, wherein a plurality of light-emitting diodes are used; the lens is a dome-shaped lens disposed for each of the light-emitting diodes, the dome-shaped lens having a curvature, a diameter, and a thickness calculated to obtain a specified level of illumination in a specified circle at a specified distance by focusing light; and a reflector is provided on a flat-plate portion above the lens, by applying a treatment for producing diffused reflection, so that the approach of the bicycle can be noticed ahead of the bicycle.

5. A bicycle headlamp according to Claim 1, 2, 3, or 4, wherein the stator, comprising the power-generating coil, the headlamp electrical circuit, the light-emitting diode, and the condenser lens are contained in the case as a unit.

6. A bicycle headlamp according to Claim 1, 2, 3, or 4,

wherein the headlamp electrical circuit, the light-emitting diode, and the condenser lens are contained in the case; and the stator, comprising the power-generating coil, is separately disposed outside the case.

7. (Amended) A headlamp electrical circuit comprising:

a resonance circuit for establishing resonance at a frequency synchronized with a certain relative speed between the magnets and a power-generating coil of the stator, obtained when a bicycle is pedaled at a predetermined standard speed, the resonance circuit comprising the power-generating coil of the stator and a capacitor connected in series with the power-generating coil; and a DC power circuit for double-voltage rectifying and smoothing electric power obtained from the power-generating coil of the resonance circuit and for supplying the electric power to the light-emitting diode.

8. A headlamp electrical circuit according to Claim 7, wherein the rectifying and smoothing circuit comprises: a dc-dc converter for rectifying electric power obtained from the power-generating coil of the resonance circuit by means of a diode and for smoothing out the electric power by means of a smoothing capacitor; and a constant-current circuit comprising at least two transistors, two resistors, and a capacitor, for receiving a direct current from the dc-dc converter and supplying a constant current to the light-

emitting diode.

9. A headlamp electrical circuit according to Claim 7, wherein a light sensor and/or a manual switch is connected to the constant-current circuit; and the constant-current circuit is configured to allow or interrupt current supply to the light-emitting diode in accordance with a sense signal from the light sensor, is configured to allow or interrupt current supply to the light-emitting diode in accordance with an on/off signal from the manual switch, or is configured to allow or interrupt current supply to the light-emitting diode in accordance with either or both of the signal from the light sensor and the signal from the manual switch.